WHAT IS CLAIMED IS:

1. An ultrasonic diagnostic equipment comprising:

a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, and which generates the transmission ultrasonic wave by controlling the frequency of at least one of the first and second fundamental waves in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may interact with a second harmonic wave of the first fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

a transmission unit which transmits the transmission ultrasonic wave to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

2. An ultrasonic diagnostic equipment as defined

in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the difference frequency component may become inphase.

3. An ultrasonic diagnostic equipment as defined in claim 2,

wherein said transmission ultrasonic wave generation unit

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at π in a case where the first fundamental wave and the second fundamental wave are of sine type; and

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or 2π in a case where the first fundamental wave and the second fundamental wave are of cosine type.

4. An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the difference frequency component may become opposite phases.

5. An ultrasonic diagnostic equipment as defined in claim 4,

wherein said transmission ultrasonic wave generation unit

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or 2π in a case where the first fundamental wave and the second fundamental wave are of sine type; and

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at π in a case where the first fundamental wave and the second fundamental wave are of cosine type.

6. An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit controls the frequency of the second fundamental wave to be lower than triple the frequency of the first fundamental wave, in order that the difference frequency component may be superposed on the second harmonic wave on a lower frequency side of the second harmonic wave.

7. An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit controls the frequency of the second fundamental wave to be, at least, equal to triple the frequency of the first fundamental wave, in order that

the difference frequency component may be superposed on the second harmonic wave on a higher frequency side of the second harmonic wave.

8. An ultrasonic diagnostic equipment as defined in claim 1,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of the second fundamental wave in order that the difference frequency component may be superposed on the second harmonic wave on a lower frequency side and a higher frequency side of the second harmonic wave.

9. An ultrasonic diagnostic equipment comprising:

a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, and which generates the transmission ultrasonic wave by controlling the frequency of at least one of the first and second fundamental waves in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may interact with at least one of a second harmonic wave of the first fundamental wave and

a second harmonic wave of the second fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

a transmission unit which transmits the transmission ultrasonic wave to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

10. An ultrasonic diagnostic equipment as defined in claim 9,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the sum frequency component may become inphase.

11. An ultrasonic diagnostic equipment as defined in claim 10,

wherein said transmission ultrasonic wave generation unit

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at π in a case where the first fundamental wave and the second fundamental wave are of sine type; and

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or 2π in a case where the first fundamental wave and the second fundamental wave are of cosine type.

12. An ultrasonic diagnostic equipment as defined in claim 9,

wherein said transmission ultrasonic wave generation unit generates the transmission ultrasonic wave by controlling the phase of at least one of the first and second fundamental waves in order that the second harmonic wave and the difference frequency component may become opposite phases.

13. An ultrasonic diagnostic equipment as defined in claim 12, wherein said transmission ultrasonic wave generation unit

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at 0 or 2π in a case where the first fundamental wave and the second fundamental wave are of sine type; and

sets a phase difference of the second fundamental wave relative to the first fundamental wave, at π in a case where the first fundamental wave and the second fundamental wave are of cosine type.

14. An ultrasonic diagnostic equipment comprising:

a transmission ultrasonic wave generation unit which generates a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second

fundamental wave at a frequency higher than that of the first fundamental wave, and which generates the transmission ultrasonic wave by controlling a phase of at least the second fundamental wave in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component or a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may cancel leakage of at least one of the first and second fundamental waves;

a transmission unit which transmits the transmission ultrasonic wave to the patient;

a reception unit which receives the reflected wave of the transmission ultrasonic wave from the patient; and

an image generation unit which generates an ultrasonic image on the basis of the reflected wave.

15. An ultrasonic diagnostic equipment as defined in claim 14, wherein:

said transmission unit transmits the transmission ultrasonic wave at, at least, 2 rates;

said reception unit receives from the patient the reflected waves of the individual transmission ultrasonic waves transmitted at, at least, 2 rates, and performs subtraction processing between the different rates; and

said image generation unit generates the ultrasonic image on the basis of the reflected waves subjected to the subtraction processing.

16. An ultrasonic diagnostic equipment as defined in claim 14, wherein:

said transmission unit transmits the transmission ultrasonic wave a plurality of times for a single scanning line;

said reception unit receives a plurality of reflected waves corresponding to the individual transmission ultrasonic waves; and

said image generation unit includes an extraction unit which extracts the second harmonic wave and the difference frequency component from each of the plurality of reflected waves.

17. An ultrasonic diagnostic equipment as defined in claim 16, wherein:

said image generation unit includes a Doppler processing unit which generates a blood flow image on the basis of the second harmonic wave and the difference frequency component extracted every reflected wave.

18. An ultrasonic image generation method comprising:

generating a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the

first fundamental wave, by controlling the frequency of at least one of the first and second fundamental waves in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may interact with a second harmonic wave of the first fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

transmitting the transmission ultrasonic wave to the patient;

receiving the reflected wave of the transmission ultrasonic wave from the patient; and

generating an ultrasonic image on the basis of the reflected wave.

19. An ultrasonic image generation method comprising:

generating a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, by controlling the frequency of at least one of the first and second fundamental waves in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a sum frequency component between the

first fundamental wave and the second fundamental wave as is included in the reflected wave may interact with at least one of a second harmonic wave of the first fundamental wave and a second harmonic wave of the second fundamental wave, and also by controlling a phase of at least one of the first and second fundamental waves in order to control the interaction;

transmitting the transmission ultrasonic wave to the patient;

receiving the reflected wave of the transmission ultrasonic wave from the patient; and

generating an ultrasonic image on the basis of the reflected wave.

20. An ultrasonic image generation method comprising:

generating a transmission ultrasonic wave that has, at least, a first fundamental wave, and a second fundamental wave at a frequency higher than that of the first fundamental wave, by controlling a phase of at least the second fundamental wave in order that, in case of transmitting the transmission ultrasonic wave to a patient and receiving a reflected wave therefrom, a difference frequency component or a sum frequency component between the first fundamental wave and the second fundamental wave as is included in the reflected wave may cancel leakage of at least one of the first and second fundamental waves;

transmitting the transmission ultrasonic wave to the patient;

receiving the reflected wave of the transmission ultrasonic wave from the patient; and

generating an ultrasonic image on the basis of the reflected wave.